



Digital consultations for weight management in the NHS: A qualitative evaluation

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ABSTRACT

Receiving digital healthcare consultations for weight management, in place of in-person appointments, has proliferated in recent years, accelerated by the COVID-19 pandemic. The objective of the present study was to investigate patients' experiences of digital weight management services (DWMS) provided by the National Health Service (NHS). Particular emphasis was placed on examining the perceived benefits and limitations of DWMS so as to identify potential means of improving provision. Sixteen patients (eight male; eight female) accessing digital consultations at one of two West Midlands (UK) NHS trusts, participated in semi-structured interviews. Interviews were transcribed verbatim and analysed via thematic analysis. We identified three overarching themes and associated sub-themes that reflect the perceived benefits and limitations of service provision as identified by patients. These were technology acceptability (sub-themes 'challenges', 'requirements/facilitators', and 'beneficial features'); treatment acceptability (sub-themes 'treatment features', 'patient attributes', and 'practitioner skills'); and treatment efficacy (sub-themes 'treatment features', 'patient attributes', and 'practitioner skills'). Themes identified in this study have informed recommendations intended to enhance acceptability of DWMS technology and treatment, potentially encouraging engagement and increasing treatment efficacy. Limitations of the present study and recommendations for further research are also presented.

1. Introduction

The term digital healthcare will be used in this research to refer to any consultation between a practitioner and patient, which is not 'in-person', but rather is mediated by the use of technology (e.g. the telephone, video call, email, SMS). The shift towards digital healthcare in response to the COVID-19 pandemic has prompted research into the impact of this new practice on patient satisfaction and outcomes. For patients living with obesity, the pandemic has resulted in increased waiting times [23] and cancellation of bariatric surgery [14]. Digital healthcare is being championed as a way of improving healthcare delivery [34] and affords many opportunities and benefits to weight management patients, including increasing capacity, geographical reach and convenience, and decreasing waiting [7]. Guidance on the provision of digital healthcare prioritises patient usability and acceptability [25, 26], therefore the impact of digital consultations on the unique

experiences of patients living with obesity warrants examination.

Discussing weight related issues can be experienced as shameful, and stigmatising [13]. Therefore, developing a good patient-practitioner relationship, and privacy are key to encouraging open and honest consultations [19]. Practitioners working in Primary Care in the UK have expressed concerns with digital consultations with regards to rapport building, trust, and privacy [22]. Primary care practitioners consulting via telephone found it harder to establish rapport due to difficulty recognising emotions and interpreting silence. There are also limitations in the practitioner being able to identify other peripheral health concerns if the patient is not seen in-person [22]. Knowing obesity typically indicates a higher risk for comorbidities [1], and recently for long-COVID [33], being able to identify other health issues and make a prompt referral is important to general health outcomes.

Evidence to date shows promise regarding acceptability of digital weight management services (DWMS). A patient satisfaction survey

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Table 1
Participant Details.

Participant ID	Gender M/F	Ethnicity	Delivery mode of digital weight management appointments received
P1	M	White	Video call / mobile phone
P2	M	White	Video call / mobile phone
P3	F	White	Video call / mobile phone
P4	M	Indian	Video call / mobile phone / email
P5	F	White	Video call / email
P6	M	White	Video call / email
P7	M	White	Video call / mobile phone / email
P8	F	White	Video call / mobile phone / email
P9	F	West Indian	Video call / mobile phone / email
P10	M	White/ Hungarian	Video call / mobile phone / email
P11	F	White	Video call / mobile phone / email
P12	F	White	Video call / mobile phone / email
P13	F	Caribbean	Video call / mobile phone / email
P14	M	White	Video call / mobile phone / email
P15	F	White	Video call / mobile phone / email
P16	M	White	Video call / mobile phone / email

with a small sample of US-based patients who switched to digital obesity services during COVID-19 found that half felt the service was as good as an in-person consultation [20]. However, the survey does not capture qualitative detail on experiences of using the service. A qualitative study of an optional online weight management intervention in Wales identified challenges, but also benefits, of this mode of delivery; and highlighted it as a potentially beneficial tool for use during the COVID-19 restrictions [8]. However, there may be important differences in the experiences (and characteristics) of people voluntarily opting for an online intervention, and those mandated to receive DWMS. With digital healthcare predicted to play an ongoing role in the UK [12], a blended approach of digital and in-person consultations is the anticipated future of weight management services [24]. Understanding how services are delivered in an acceptable and accessible way, accounting for individual differences, is a critical strategy to ameliorate the impact of COVID-19 on waiting lists and patient health [6], and to improve service delivery and overall patient experience, even once COVID-19-specific challenges have been addressed. The present study aims to:

- 1) Contribute new knowledge regarding how acceptable and effective patients living with obesity find DWMS.
- 2) Explore individual and environmental factors that influence perceptions of acceptability and effectiveness.
- 3) Use this knowledge to make recommendations for patients and practitioners.

2. Method

2.1. Study design

Individual semi-structured qualitative interviews were carried out to examine patient experiences of DWMS in the Midlands during the COVID-19 pandemic. Experience-based co-design [3] was applied, with two patient representatives from weight management services, contributing to the design of the study, interview schedule, and analysis of data.

2.2. Context

The two NHS Teir 3 wt management services shifted to digital consultations with dietitians since this was enforced by COVID-19 precautions. Both trusts provide patient choice regarding whether the consultations are digital or in-person. For one trust, patients are encouraged to conduct their first consultation in-person. Patients have contact details for their clinicians, and emails are used between appointments to keep in touch, and for the purpose of sharing resources.

Table 2
Theme 1: Technology acceptability when accessing remote weight management services.

Subtheme		Illustrative quotation (s)
Challenges	Anxiety over technology use	“It was quite nerve-wracking to do it the first time... [I] was logging on that bit earlier than what was required, just so I wasn’t feeling rushed or, you know, anxiety over, or, ‘Am I going to do it all right or wrong?’” (P5)
	Need to develop confidence & competence	“When I started it was a bit difficult because I’m not a technology person... I have to ask my children to help me. The first day I think it was OK, because they assist me. But the second time, nobody was in... and when [practitioner] came on the phone call, I don’t know what I’m doing and I was just screaming, ‘I can’t get it!’” (P9)
	Technical issues	“We had a couple of technical issues, where we were both trying to join and it kept kicking us both out, but that happens... the system being a bit temperamental” (P12)
Requirements/facilitators	Limited non-verbal communication	“Facial expression is different when it’s face-to-face.” (P9). “I enjoyed both, but... that eye to eye contact and good conversation you feel that somebody sympathises with you. On the telephone... you wouldn’t know how I’m really feeling” (P13).
	Accessible Introduction	“If I can’t use the technology and you expect me to get onto Teams [laughs] it won’t work, as we would spend the whole 30 min trying to get me online, so that step by step guide... would need to be in simple language really for everyone to understand.” (P13). “You could do with, like a little welcome pack, ‘Here’s what’s going to happen, this is what the screen’s going to look like, here’s where you need to press, don’t panic, it’s going to be fine, if the volume doesn’t work, press here.’” (P11).
Support	Streamlining/simplification	“When I say idiot-proof, I do mean trying to think of everything, from somebody who’s never done it before, never seen it, they make it as simple as possible.” (P11). “If you just send someone a video that will help a few people who, like me, who know what they’re doing... [but] if you really don’t know what you’re doing, a video link to YouTube isn’t going to help you because it will just be like, ‘What’s this?’” (P4).
	Support	“it’s always nice to know that no matter how much we do rely on technology, that somewhere there is a human we can contact because we still trust humans more” (P1) “If I don’t understand something, I will let my children come and sit with me... [if] you are on a Zoom call and you think you can’t understand, you can tell the person, ‘Oh, because I’m not good in English, can someone join me and explain?’” (P9).

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Table 2 (continued)

Subtheme	Illustrative quotation (s)	
Experience	“We just get so used to it, it’s our day-to-day for the last two years” (P1).	
Contingency planning	“I always have a good power source, I make sure I have my plug handy” (P15); “There was a couple of times where my connection, or [practitioner’s] connection didn’t work, but I just sent her a text message... then we’d switch it to a telephone call instead” (P5); “They give you 5 min to sort it out at both ends. If you don’t, they just call you.” (P12).	
Ethical practice	“The ethical side of it is important, I think some kind of emotional screening... to see whether doing this on a screen is the best way forward” (P2); “Reassuring patients that... the recording will only be between you, the practitioner, their GP. And they’re guaranteed data confidentiality under, what the heck’s the law, GDPR laws etc.” (P2).	
Beneficial features	Consistency and familiarity	“I didn’t have to upgrade to anything new, I didn’t have to buy anything new; it all worked.” (P5); “Everyone does it slightly differently... For [A] it’s the easiest one. The one I used the other day with [B] was slightly more difficult.” (P4).
	Links with other services	“The cognitive behaviour therapy I had was phone call [&] did me more help than I’ve in had in I don’t know how many years. But I would not have had that if [practitioner] had not have referred me, because she knew that service was available.” (P11)
	Online peer networks & diaries	“I liked that they did the group thing online... I don’t want to be showing people how overweight I am, so I can do this online fine, [but] face-to-face... I stutter” (P11).
	Perceived increased control continuity & connection	“The benefits were that we didn’t stop our meetings... you’d always know that after a few weeks you were going to have that telephone call. You wouldn’t say ‘oh we were hit by covid so I missed my appointment.’ They were there if you wanted them.” (P13).

2.3. Participants and recruitment

Ethical approval was granted by the University of Wolverhampton and the Health Research Authority (Ref: 22/SW/0013). Dieticians from two NHS trusts in the Midlands, UK, provided prospective participants (who met project inclusion criteria of being 18 +, having accessed DWMS within the last 24 months, being able to communicate in English and provide informed consent) with information sheets during routine appointments or, for those recently discharged, via purposive correspondence. Sixteen participants (eight men and eight women) who consented to be contacted were recruited. None who were invited, refused to consent. At the time of interview all participants had attended at least one in-person hospital appointment and were able to draw comparisons between the different modes of delivery. Nine had received in-person appointments initially, with seven initiating their first contact via DWMS. Patient demographics are shown in Table 1. No participants

Table 3

Theme 2: Treatment acceptability when accessing weight management services digitally.

Subtheme	Convenience	Flexibility	Fewer cancelled appointments	Reduced burden on other services	Faster and more frequent support	Health and safety	Anxiety	Safe space	Individual differences	Reduced anxiety
Tangible benefits	Illustrative quotation(s) “When I need to go out, I need two hours prior to get things done... that’s why I opted for [DWMS], and it’s working for me...I feel that it’s better suited for my needs” (P10). “I’ve had to change a couple of appointments... online access has enabled me to do that... [&] given me flexibility around my work and my life as well, which I don’t think would be there if I was on constant face-to-face appointment.” (P2). “The flexibility of the customer now is much wider. It doesn’t cramp their lifestyle”. (P1) “If you’ve got serious health problems. sometimes you just don’t want to leave the house. you’ll just ring up and say, ‘can I cancel it?’ and that’s a wasted appointment” (P4); “[Cancellations] will be lower [with DWMS] because you have so much other alternatives to going there in person”. (P10) “I was trying for a very long time to get my GP to understand that I’ve got this real problem. They said it wasn’t them and it wasn’t until I was in the diabetics team, and they recognised how urgent I needed, that they put me ahead. (P4) “If you are desperate, you are kind of, in need of that support a lot quicker than most. If it can be sorted out a lot quicker... [you] feel as though something’s being done about it, without waiting around for months on end for a face-to-face appointment” (P6); “The online service was able to sort of expedite my appointment... [&] has ensured that I can get more regular access as well to my dietitian.” (P2) “Queuing up and waiting [for f2f appointments] if you’re worried about covid, which I really was at one point... You’re going to really worry” (P4) “I was vulnerable at that time as well... I was scared to go out and I wasn’t allowed to go out anywhere anyway because of my operation that I had had so it [DWMS] was convenient for me.” (P13) I do struggle with anxiety... [&] find it hard to kind of open up and express myself in a group setting... depression, anxiety... the weight was really getting me down” (P6); “If you’re a binge eater or bulimia with that comes depression; anxiety; so sometimes you just don’t want to leave the house or venture out.” (P4) “I’d actually just set it up in the car... in the car park at work and just chat away. And I knew that I was in a private area because I was in a car on my own.” (P 8); “I had my bedroom... [that] was my own space, so it was OK.” (P13) “I could get just as much information from a remote appointment as I would in person. It’s just because of my disability that the in-person ones become more needed.” (P16) “It’s more gentle when you do it this way.... because having to get up and									
Psychological Considerations	(continued on next page)									
Psychological benefits										

Table 3 (continued)

	go to a meeting would have just stopped at least half of us even attending.” (P4); “As soon as you go into that hospital environment of face-to-face. I know it’s professional anyway, but it’s like a barrier. You don’t open up as much. Whereas, if you’re sat at home, this is, I’ve got my dogs, I’ve got some support, if I needed to, I could have my partner with me. It’s different than being sat in the hospital talking. (P11)
Comfort	“Because you’re at home you’re way more comfortable so you speak more honestly. You’re more comfy, you’ve got your own drinks and your own seat, and you feel more relaxed, you get more out of it.” (P4)
Online disinhibition	“I think it’s easier for people to probably open up to their therapist more via a video link... it feels less personal. So it doesn’t feel as clinical, because obviously you’re in your own home.” (P6); “I’m more liberated saying everything that I want to say... [whereas] if we would meet face-to-face I would have another filter on me”. (P10)
Control	“It was only afterwards he saw the whole me. So it’s almost like a sneak preview of the person. (P1); “for me, it certainly it gets you over that initial barrier as having to confront things, and because you have control. It could be that in some cases control is a contributory factor to why you have weight management issues. So what you can control I think that’s quite powerful.” (P3)

were known to the researcher in advance of data gathering, nor were any characteristics or personal details of the interviewer communicated to them.

2.4. Data collection

Interviews (lasting 30–64 min) were conducted via Microsoft Teams (n = 15) or telephone (n = 1), audio recorded and transcribed verbatim. All participants were interviewed alone, no repeat interviews were conducted. A female research associate (KS) with a PhD and post-graduate training in qualitative methodology conducted the interviews. Interview questions were broadly informed by the technology acceptance model (TAM: [9], which has been applied to many online behaviours including e-health service use [35] and can help identify factors promoting engagement. Prompts focused on both external factors (good and bad aspects of the service) and internal factors (perceptions about usefulness and ease of use, and attitudes towards services). Field notes were taken and used to populate Table 1. Transcripts were not returned to participants for comment.

2.5. Analysis

Transcripts were anonymised and analysed in N:Vivo using thematic analysis in accordance with the six iterative phases outlined by Braun and Clarke [4]. We used information power to determine appropriate sample size because it is a more appropriate means to determine sample size and judge when to stop data collection as compared to data saturation [5]. Information power indicates ‘the more information the sample holds, relevant for the actual study, the lower amount of participants is needed’ [21], p. 1753). Analysis was partially deductive, in that it was guided by the TAM [9], specifically in terms of identifying

Table 4

Theme 3: Perceived influences on DWMS treatment efficacy.

Subtheme	Clarifying expectations	Illustrative quotation(s)	
Treatment Features	Clarifying expectations	“Going through; ‘this is how we run it, these are the stages of which we work’... laying it out from the very first appointment so you know what to expect” (P6)	
	Coordination with other services	“[Nutritionist] referred me into diet psychology support, with a lady called [psychologist], who has been fantastic... we are [all] working together” (P15).	
	Follow up	“It was a big motivation for me knowing that she was checking in on me” (P5).	
	Frequency of appointments	“I’ve had six months where I’ve had no support, and during those six-months I’ve had anxiety and issues” (P11).	
	Monitoring	“The most important thing for me, it was when I was getting measured, I had the right accuracy for my measurement” (P13).	
	Choice of face-to-face or DWMS	“People don’t like to be pushed in one direction or another... give a person a choice and let them be happy with the way they’ve decided to move forward” (P1).	
	Considering patient needs	“Some kind of emotional screening to see whether doing this on a screen [remote] is the best way forward” (P2).	
	Location of consultation	“The fact that you can choose where you are going to have that meeting... is so important... choosing where you’ll feel safe, where you can be honest” (P3).	
	Patient attributes	Experience with online technology	“We just get so used to it, it’s our day-to-day for the last two years. we’ve learned to cope with the deficit of human contact in a lot of cases” (P1).
		Self-awareness	“Recognising the things in yourself through this journey help you get better” (P1).
		Self-care	“[Dietician] got me thinking about looking after myself and putting myself first” (P5).
		Self-confidence	“I’m a very introvert person ... I’m not a talker and I feel more confident speaking with [dietitian] about issues even if they are more delicate” (P10).
		Self-determination	“It’s going to take a lot of effort, self-determination and mental strength” (P16).
Self-conscious		“I don’t want to be showing people how overweight I am at the moment. So I can do this online fine, face-to-face, I stutter, and so I’d say online was, it works well” (P11).	
Goals	“Go in there with your goals, don’t just wait for them because they are basing everything on what you are telling them.” (P12).		
Accountability	“The main accountability is always going to be on yourself anyway. It’s not down to the nutritionist to lose the weight for you” (P14).		
Attention during session	“Confidence that you aren’t going to be distracted by ‘let me just answer an email while I’m here’ ... it’s more upon you to not be distracted by other things” (P3).		
Honesty	“I’m only cheating myself if I’m trying to hide the situation I’m in. So the only way I can get proper support is being open and honest” (P1).		
Motivation	“Talking to [dietitian] I was then motivated” (P11).		
Understanding	“Whenever I’ve done telephone. I felt any questions I might have had based on the information given to me I’ve been able to understand and work with” (P14).		

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Table 4 (continued)

Practitioner skills	Ability to use technology	“It’s not always easy to read a screen, but the person on the professional side using it, often obviously becomes more competent at reading the signs on the screen” (P1).
	Interpersonal skills	“Even though I’m not happy about... how I look, he got me to relax, and so got me into the right mind-set straight away” (P1); “[Dietician] was really helpful... she’s never once made me feel like I can’t reach out” (P7); “She didn’t judge me... didn’t just say to me ‘oh you need to lose weight’, she went with me from day one until now” (P13).

factors (external variables) that influenced perceived acceptability (ease of use) and efficacy (usefulness). However, we were also led inductively by the data and did not pre-impose a framework or restrict codes to those conforming to the TAM. The research team (four of whom read and coded all transcripts independently) met to discuss codes, and to review, refine, and name themes. A working document was shared with patient and practitioner team members for discussion, and to arrive at the final themes.

3. Results

Three main themes of technology acceptability; treatment acceptability; and treatment efficacy, along with subthemes, were identified. These are summarised, with illustrative quotations, in Tables 2, 3 and 4 respectively, and described below.

3.1. Technology acceptability

This theme encompassed ‘challenges’, ‘requirements/facilitators’, and ‘beneficial features’ of using DWMS.

3.1.1. Challenges

Challenges around the technology and its acceptability included anxiety around using online services, fuelled by uncertainty about how to go about it, and fear of making mistakes. The development of sufficient confidence and competence was a challenge that was important for those inexperienced in using technology to tackle, to enable them to benefit from DWMS. Internet connectivity issues affected experienced as well as novice users of technology, as did the comparatively limited capacity for non-verbal communication in online interactions (which was more restricted for telephone consultations than video calls).

3.1.2. Requirements and facilitators

Specific practises helped participants utilise the DWMS technology effectively, potentially reducing anxiety, and increasing competence and confidence. For example, having an accessible ‘how-to’ guide (electronic or physical) containing introductory information and links. The importance of simplification of processes to make them ‘fool-proof’ was discussed by many participants, with most reporting that this was something the service already did well.

Technical support was important, particularly to those low in initial confidence with the technology, and included support from the practitioner, friends or family, and IT literacy support from community services such as libraries. Some spoke of rapid upskilling in technological competence necessitated by COVID-19 for work or home-schooling, which, indirectly, equipped them for DWMS. Having a ‘backup’ or contingency plan (such as a telephone call in the event of IT failure) was valued, and instrumental in reducing technology-related anxiety.

3.1.3. Beneficial features

Participants appreciated that DWMS were accessible using familiar

devices but would have preferred a consistent platform to be used for digital healthcare, across all services. Some perceived that the online delivery facilitated greater links with other services, though others raised this as a desirable, rather than existing, feature. Similarly, some described accessing and appreciating peer networking and support online, whereas others described wanting but not, currently, having access to this. Online diaries were a desirable extra, though some described using external applications to fulfil this need. Many felt DWMS facilitated extra asynchronous communication, including emails and text messages, which created greater consistency and support, affording more control over scheduling appointments, updating practitioners, and setting the agenda for sessions.

3.2. Treatment acceptability

This theme encompasses factors that contributed to (or in some cases detracted from) the acceptability of DWMS. In contrast to theme 1, which focuses on the technology, this theme deals with acceptability of the *treatment* itself, when delivered digitally. It includes three sub-themes; ‘tangible (practical) considerations’; ‘psychological considerations’; and ‘psychological benefits’.

3.2.1. Tangible considerations

Almost all participants spoke about the convenience and flexibility of online weight management, and its ability to save them time and effort, as a major benefit - particularly in the context of increasingly demanding lives. For some, the convenience of digital delivery was not just preferable, but essential for enabling engagement with the service. Health and Safety was mentioned by a few participants, with one appreciating avoiding potential exposure to infection, by accessing services digitally.

Financial benefits were reported, due to removal of commuting costs and/or not needing to take (unpaid) leave from work. These things were particularly important to those with physical disabilities or living in remote areas; those with challenging financial circumstances; and those with competing childcare or work responsibilities.

There was a perception that, when compared with in-person services, DWMS expedited access to treatment and provided greater continuity of provision, affording various practical benefits of a timely and reliable service. Some described being able to access treatment even while on holiday or unfit to travel, making them less likely to need (or want) to cancel appointments, compared with in-person. This, and the fact DWMS for some was their first experience of accessing appropriate care for the issues they were having (rather than seeking help through less tailored services like their GP), contributed to the perception that DWMS reduced burden on the NHS. Many described reduced burden on their support networks too, for example there was reduced need for help with childcare or transport.

3.2.2. Psychological considerations

The psychological importance of having/choosing a ‘safe space’ from which to join appointments was noted by several people, as it could foster a sense of ownership and autonomy; and encourage open and honest dialogue. Conversely, it could hamper the effectiveness or acceptability of treatment for those without access to such psychologically ‘safe’ spaces.

Importantly, there were individual differences in how people felt about and responded to DWMS, with some feeling more able to ‘open up’ online, and more focused on their session when doing it digitally, while others described feeling the opposite. There was a suggestion that anxiety over their first appointment would be alleviated if they had a picture or video of the practitioner they were to work with in advance.

3.2.3. Psychological benefits

Psychological benefits of DWMS encompassed ‘reduced anxiety’; ‘comfort’; ‘online disinhibition’; and ‘control’. Many described a negative emotional impact of negotiating the logistics of attending in-person

appointments, which could exacerbate pre-session anxiety; with digital appointments viewed by several as being far less challenging, emotionally. Some also reported less fear of potential judgement or stigma when engaging digitally.

Several participants felt more comfortable and relaxed during digitally mediated appointments, due to being in their own space, where they felt safer and more in control (in contrast to the hospital). A feeling of greater psychological wellbeing was achieved through the physical comfort of casual clothing, and no commute. Some emphasised the salience of these factors for WM clients, due to increased likelihood of physical/mobility issues and/or appearance-related anxiety.

A few participants drew an explicit link between this increased level of comfort and the ability to speak openly and honestly. Some degree of online disinhibition was common amongst the participants, with some describing feeling less restrained or self-conscious, and some describing being able to share more online, and/or establish a deeper connection.

The control afforded in being able to adapt the set up of video conferencing for digital appointments was valued (e.g., being able to switch off the camera or direct it only at the head and shoulders); and contributed towards mitigating anxiety and/or increasing disinhibition. The ability to communicate with clinicians between sessions and flag up questions or issues ahead of the next meeting also enhanced feelings of control – as discussed in technology acceptability.

3.3. Treatment efficacy

This theme presents patients' perceptions of the extent to which DWMS produced desired outcomes and is divided into three sub-themes of 'treatment features', 'patient attributes', and 'practitioner skills'. In terms of desired outcomes, patients were primarily looking for informational support that assisted weight reduction, but often also sought emotional support for the personal circumstances surrounding weight gain.

3.3.1. Treatment features

Creating a supportive environment for weight management and meeting bespoke needs of patients were seen as treatment features which influenced treatment efficacy. Specifically, treatment efficacy was improved where patients knew from the outset what to expect from DWMS, including frequency of consultations, follow up on the content of these, monitoring (weight, diet and wellbeing), and coordination with other services as necessary (e.g., mental health support).

In respect of accommodating bespoke needs, the majority of patients stated a preference for digital consultations, with the opportunity of an in-person consultation, dependent on circumstances. This included: a) their stage of treatment, with most preferring digital consultations in the first instance in order to become comfortable and develop rapport with their healthcare practitioner; b) the purpose of the session, with all participants indicating a need for in-person consultations for physical assessments; and c) their current wellbeing/symptoms, for example there were mixed preferences for in-person or digital when feeling emotionally low.

3.3.2. Patient attributes

Patient experience with online technology was perceived as influencing the efficacy of DWMS, echoing a subtheme from technology acceptability. All patients perceived themselves to be ultimately responsible for their weight loss, and their personal attributes were seen as providing resources to initiate and persist with weight loss strategies even when faced with setbacks. Participants perceived high levels of self-awareness, self-care, self-confidence, and self-determination as improving the efficacy of DWMS on the basis of increased engagement with and adherence to the recommendations of healthcare practitioners for weight management. By contrast, being highly 'self-conscious', was perceived as inhibiting treatment efficacy.

Building on these attributes, setting 'goals' and the associated

considerations of 'accountability', 'attention during session', 'honesty', 'motivation', and 'understanding' were perceived as fundamental to digital treatment efficacy. Participants consistently noted a perception that treatment efficacy was significantly influenced by the personal attributes identified, as these were seen to be supportive of behaviour change, and its long-term maintenance.

3.3.3. Practitioner skills

Two practitioner skills were perceived by all patients as influencing the efficacy of DWMS. These were 'ability to use technology' and 'interpersonal skills'; with these skills showing a degree of overlap. Participants were of the belief that the ability to utilise technology, including assessing non-verbal and emotion cues (interpersonal skills), could be developed by their practitioner. When exploring the interpersonal skills perceived as influential in treatment efficacy, the ability of a practitioner to develop a (relaxed and comfortable) relationship, to appear non-judgemental, and supportive were all noted as important. Of these skills, being non-judgemental was noted by some participants as foundational in subsequently developing and maintaining a supportive relationship.

4. Discussion

Through this in-depth qualitative examination of UK patients' experience of DWMS, we identified three distinct, though related, overarching themes: the acceptability of the technology; the acceptability of the treatment via digitally mediated consultation; and the efficacy of the treatment.

Within each theme, the array of sub-themes reflected a complex network of factors influencing individuals' experiences with, and attitudes towards DWMS. Some subthemes were spoken about by almost all participants, an example being the convenience of DWMS. Consistent with Dutot et al., [11], convenience was one of the main drivers of engagement with DWMS.

All three themes, and many subthemes, can be broadly related to the TAM [9]. Our themes of technology acceptability and treatment acceptability both encompass sub-themes that relate to ease of use, while efficacy is, in essence, about the usefulness of the DWMS. Beliefs about treatment acceptability have been seen to drive intentions to engage with digital consultations [16]. Consistent with Doyle et al., [10], where individuals perceived that a treatment was working (efficacious), they were more likely to adhere to and benefit from it.

Some reported greater ease of focusing when engaging in consultations digitally, while others described the opposite effect. Whilst all participants identified some benefits of using technology, a range of barriers to digital consultations also factored into the narratives. Individuals who had experienced obstacles accessing in-person services, tended to provide enthusiastic reviews of the digital alternative. By contrast, those who felt their needs were only partially met by the digital service (e.g., because they depended upon physical weigh-ins for self-monitoring or motivation), noted that they would not wish to replace in-person services entirely. These findings highlight the importance of recognising individual differences in needs, attitudes, and experiences.

The ease with which several participants described being able to speak honestly and openly during digital consultations is characteristic of 'online disinhibition' [30]. Studies of therapeutic relationships online have identified beneficial effects of such benign disinhibition (e.g., [32]) and our study suggests that at least some participants perceive similar benefits in relation to DWMS. However, confidence in being able to communicate needs and emotions effectively using DWMS was mixed, and some felt more able to speak candidly in-person. The Royal College of General Practitioners [29] recognise that it can be harder for practitioners to assess patients' non-verbal cues and emotion via digital consultations, and the Patient information forum [27] reports that in the UK 1.7 million people are unable to explain symptoms or feelings over the phone. Our findings underpin the importance of individual differences

Box 1

Stage of treatment: Send a photo of the practitioner in advance. Offer the option of face-to-face or a remote consultation for the first appointment where possible. Provide a pack to inform the patient about how and where consultations will be conducted including information about car parking, public transport and relevant amenities in the healthcare setting. **Focus of treatment:** Discuss with clients their individual preferences for remote or face-to-face appointments where emotional support is required. Face to face appointments to be scheduled for purposes of measurement and monitoring. **In session:** Allow time at the beginning and end of consultations for transition between activities when working remotely. Maintain good 'eye contact' when using cameras. Consider the environment in which the patient finds themselves and be open to inviting the patient to considering more suitable locations/ time of day/ privacy. Tell the patient whether sessions are being recorded. **Technology:** Consider whether the patient has internet access at home. Consider the device the patient is using for their remote consultations. Ensure that working remotely does not incur costs for the patient. Provide clear details in hard copy about how the service will be delivered. Provide a step-by-step visual guide in hard copy for accessing remote consultations including how to access help. Discuss expectations around the use of cameras and microphones when using video conferencing. Communicate a clear plan for what happens in the event of a poor signal. Download recommendations at: <https://forms.gle/9xDwZypwd5JU2BN5A>

and setting patient expectations regarding what can be anticipated from their healthcare. Setting expectations enhances healthcare experience, establishes early two-way communication between patient and practitioner, and improves treatment outcomes [18].

Patients described the contribution of their own, and their practitioner's attributes and skills, toward treatment efficacy. Findings support previous research illustrating the role of patient attributes in the efficacy of weight management treatment; including self-control [15], motivation [28] and goal setting [17]. Practitioner attributes and skills such as being supportive and non-judgemental, fostered a sense of accountability and increased motivation to engage in weight management, which is argued to enhance treatment efficacy [2,31].

The equal male representation amongst interviewees is unusual for research in weight management, and a strength of the study. However, the data were gathered from only two NHS trusts, limiting the generalisability of findings. In addition, patients' rapport with the clinicians identifying them for the study may have influenced the evaluations. All interviews were conducted using Microsoft Teams due to restrictions in place at the time, and distractions were noted in some participants' environments. However, the convenience of using an online platform for interviewing facilitated recruitment and interviewing, and may have lessened social anxieties about participating in research - which are common among the participant group. We did not gather practitioner experiences of providing online consultations, and this presents one potential direction for future research.

Findings highlight individual differences in experiences, opinions, and intentions related to DWMS. This has informed recommendations developed for practitioner use that are intended to improve the uptake, acceptability, and accessibility of digital consultations for patients, including those who may otherwise be less likely to benefit from digital healthcare delivery, such as patients experiencing appearance-related anxiety, or those unconfident in the use of technology (See Box 1). Further research may be directed towards measuring the impact of these recommendations on practice and uptake of services.

5. Conclusion

The present study contributes new knowledge regarding factors that influence the acceptability and effectiveness of DWMS. Whilst DWMS offer some advantages, in-person consultations cannot be replaced. The convenience of DWMS was identified by all participants as supporting engagement with digital services, however, individual differences in needs, attitudes, and experiences, influenced perceptions of digital treatment acceptability and efficacy. This underpins the importance of identifying and accounting for individual differences in informing an offer of in-person or DWMS. Indeed, participants consistently noted that they would like to maintain an option of in-person services dependent on

treatment or personal needs. Practitioners are well placed to determine treatment pathways with patients in consideration of focus of treatment, treatment needs and patient attributes. Findings also indicate the influence of practitioner attributes on patient engagement with DWMS and weight management services generally. Recommendations for patients and practitioners are provided that accommodate the identified factors of influence, and address equality of access to healthcare for patients living with obesity; future research should explore outcomes following the implementation of these.

Ethical statement

The authors declare that all experiments on human subjects were conducted in accordance with the Declaration of Helsinki, <http://www.wma.net>, and that all procedures were carried out with the adequate understanding and written consent of the subjects.

The authors also certify that formal approval to conduct the research described has been obtained from the University of Wolverhampton, and from the Health Research Authority, UK. Approval letters can be provided upon request.

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Author statement

Conceived and designed the experiments WN, JL, TD, PM, HT. Performed the experiments KS. Analyzed and interpreted the data WN, JL, KS, TD. Contributed reagents, materials, analysis tools or data; HT, PM. Wrote the paper WN, JL, KS, TD.

Declaration of Competing Interest

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